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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	:	Docket: OT-4328
FRANK W. ADAMS ET AL.	:	Date: May 30, 2006 (Tuesday after Federal Holiday)
Appln. No. 09/163,259	:	Appeal No. 2006-0422
Filing Date: September 29, 1998	:	

Title: Elevator System Having Drive Motor Located Between Elevator Car and Hoistway Wall

Board of Patent Appeals and Interferences
US Patent and Trademark Office
PO Box 1450
Alexandria, Virginia 22313–1450

REQUEST FOR REHEARING

Applicant is receipt of a Decision on Appeal, mailed March 28, 2006, from the Board of Patent Appeals and Interferences. Applicant respectfully requests rehearing, based on the following points that Applicant believes have been misapprehended or overlooked in rendering the Decision.

In affirming the Examiner's rejection of claims 1 and 19 as obvious under 35 U.S.C. §103 over European Patent Publication No. 0 718 618 (Aulanko) in view of U.S. Patent No. 1,035,230 (Pearson), the Board affirms the Examiner's determination that it would have been obvious to modify the apparatus of Aulanko to employ flat ropes taught by Pearson. However, the Decision reveals a number of points that Applicant believes have been misapprehended or overlooked.

(1) The Decision indicates that the Aulanko teaches space savings "essentially" and "primarily" by eliminating the machine room. To the contrary, Aulanko discloses horizontal space savings as an objective and as an advantage of the elevator presented therein.

Aulanko indicates that the elevator described therein is to meet the need to achieve an elevator "for which the space requirement in the building, irrespective of the hoisting height, is ***substantially limited to the space required by the elevator car and counterweight on their paths including the safety distances and the space needed for the hoisting ropes***." (Column 1, lines 36-40, emphasis added.)

Aulanko further indicates that one of the advantages of the system, in addition to the elimination of the machine room, is the "[e]fficient utilization ***of the cross-sectional area*** of the elevator shaft." (Column 1, lines 49-50 and 54-55, emphasis added.)

While the elimination of the machine room is an important factor, so is the impact on the horizontal footprint of the hoistway, which Applicant notes will impact the available space on every floor in the building. The importance of this factor is clear from the several references in Aulanko to the flatness and/or location of the machine:

> The machine unit 6 placed above the path of the counterweight 2 is of a flat construction as compared to its width [.] (Column 3, lines 45-47.)
>
> All essential parts of the machine unit 6 and the associated equipments 8 are placed between the shaft space needed by the elevator car and/or its overhead extension and a wall of the shaft. (Column 3, lines 51-55.)
>
> The machine unit 6 placed above the path of the counterweight 2 is of a flat construction as compared to the width of the counterweight, its ***thickness being preferably at most equal to that of the counterweight***. (Column 5, lines 28-49, emphasis added.)
>
> The hoisting machine unit 6 employed in the invention, together with the motor, can be of a very flat construction. For example, in an elevator with a load capacity of 800 kg, the rotor of the motor of the invention has a diameter of 800 mm and the minimum thickness of the whole hoisting machine unit is only about 160 mm. Thus, the hoisting machine unit used in the invention can be easily accommodated in the space according to the extension of the counterweight path. (Column 6, lines 39-47.)

The Decision indicates that Applicant's contention that use of a flat rope in the Aulanko system would destroy Aulanko' space saving objective rests on an "unreasonably narrow" view of the manner in which Aulanko achieves space efficiency. To the contrary, Aulanko ascribes comparable importance to the horizontal dimensions of the hoistway (and the impact of the machine thereon) as it does to the elimination of the machine room. Applicant submits that the Board overlooked this important aspect of Aulanko in affirming the Examiner's rejection.

(2) The Decision indicates that Aulanko does not specify the exact nature of the hoisting ropes, a shortcoming that the Examiner cures by turning to Pearson. To the contrary, the ropes in Aulanko are shown as being round.

Figures 5 and 6 clearly illustrate the ropes 102, 302 as having a standard, round cross-section. Therefore, the use of the flat ropes of Pearson does not cure a shortcoming in the teachings of the Aulanko, but rather deviates from the teachings thereof. Applicant submits that the Board overlooked this important aspect of Aulanko in affirming the Examiner's rejection.

(3) The Decision indicates that Applicant's assertion regarding sheave elongation is "unsupported conjecture," and the "record contains no evidence that the use of flat ropes would significantly enlarge the size, or change the relatively flat configuration, of Aulanko's drive machine so as to require an elevator shaft which is larger to any appreciable degree." However, the record does support the conclusion that the sheave elongation would be significant.

Referring to Figures 5 and 6 of Aulanko, it is clear that any flattening of the ropes 102, 302 – i.e., increased width and decreased thickness – necessarily would increase the axial space required for each rope. This fact is underscored by the teachings of Pearson ("present a ***broad*** friction surface" (page 1, line 89-90; emphasis added)) and the very motivation for the combination that is asserted by the Examiner ("in order to produce a ***large*** friction surface" (answer, page 3; quoted at Decision, page 6; emphasis added). If the ropes were not substantially widened, then the asserted advantage for using the flat ropes would not be achieved.

Further referring to Figures 5 and 6, it is also clear that any increase in width of the ropes will increase axial length of traction sheave by at least the increase in width of each rope multiplied by number of ropes. Neither traction sheave has any additional space to accommodate a wider rope. And this does not even take into account the added space between grooves that is shown in Pearson, the only traction sheave on the record for use with flat ropes, in contrast to the adjacent grooves in Aulanko.

Finally, neither machine has any additional space to accommodate an axially longer sheave. Therefore, it is also clear that any increase in the axial length of the traction sheave will increase the width of the traction machine.

Therefore, even if the flat ropes were only twice as wide as the round ropes they replaced (which would be necessary to achieve a comparable rope cross-section with a mere 5:1 width-to-thickness ratio), the machine would have to be nearly twice as thick to accommodate them. In a system in which the machine is supposed to fit in the space over the counterweight, this would be a significant impact.

Again, Applicant notes that any increase in the horizontal footprint of the hoistway will impact the building space on every floor.

Thus, it is clear from the record that the spatial impact of using flat ropes would be significant, especially in the case of a system in which the flatness of the machine of such apparent importance. Applicant submits that the Board overlooked this impact in affirming the Examiner's rejection.

CONCLUSION

In view of the foregoing points that Applicant believes have been misapprehended or overlooked in rendering the Decision, Applicant requests that the Board reconsider its decision to affirm the Examiner's rejection of claims 1 and 19 as obvious under 35 U.S.C. § 103 over Aulanko in view of Pearson and that those rejections be reversed.

Since the remaining claims depend variously from claims 1 and 19, Applicant requests that the rejections of the dependent claims be reversed also.

Therefore, Applicant requests that all of the rejected claims be passed to issue.

Please charge any additional fees or credit overpayment to Deposit Account No. 15-0750, Order No. OT-4328.

Respectfully submitted,

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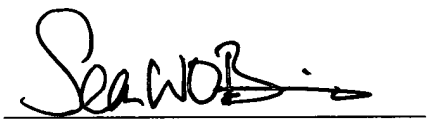

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